| SUBJECT: 5th Grade Computer | GRADE: 5 |
|---|---|
| **Unit Title:** Scratch Programming | **Time Frame:** 5 Days |

| UNIT OVERVIEW |
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| Within this unit, students will learn how to create a Scratch program. By the end of this unit students will have made projects with backgrounds and dialogue. |

| LRG SKILLS AND DISPOSITIONS | PA STANDARDS |
|---|---|
| Communication and Empathy: Adventure on the High Seas (S2B) | **1A-AP-10:** Develop programs with sequences and simple loops, to express ideas or address a problem.<br>**1A-AP-11:** Decompose (break down) the steps needed to solve a problem into a precise sequence of instructions.<br>**1A-AP-13:** Give attribution when using the ideas and creations of others while developing programs.<br>**1A-AP-14:** Debug (identify and fix) errors in an algorithm or program that includes sequences and simple loops.<br>**1B-AP-08:** Compare and refine multiple algorithms for the same task and determine which is the most appropriate.<br>**1B-AP-09:** Create programs that use variables to store and modify data.<br>**1B-AP-10:** Create programs that include sequences, events, loops, and conditionals.<br>**1B-AP-13:** Use an iterative process to plan the development of a program by including others' perspectives and considering user preferences.<br>**2-AP-11:** Create clearly named variables that represent different data types and perform operations on their values.<br>**2-AP-12:** Design and iteratively develop programs that combine control structures, including nested loops and compound conditionals.<br>**2-AP-13:** Decompose problems and subproblems into parts to facilitate the design, implementation, and review of programs. |

| COMPETENCIES | LEARNING TARGETS |
|---|---|
| I can code a program to express an idea or solve a problem. | ● I can use appropriate code to solve problems.<br>● I can edit existing code to solve a new problem. |
| I can approach a challenge with computational thinking. | ● I can think in sequential steps.<br>● I can debug a program using a variety of methods.<br>● I can describe the purpose of a section of code. |

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|---|---|
| I can demonstrate an understanding of many digital devices. | ● I can understand that computers process information quickly. |
| I can use best practices while programming. | ● I can test code frequently to assure that it is working correctly.<br>● I can use good programming practices to make code more readable. |

| SUBJECT: 5th Grade Computer | GRADE: 5 |
|---|---|
| **Unit Title:** Creativity | **Time Frame:** 5 Days |

| UNIT OVERVIEW |
|---|
| Within this unit, students will learn how to use their programming knowledge to create their own creative projects using Scratch programming environment. By the end of this unit students will have made their own projects. |

| LRG SKILLS AND DISPOSITIONS | PA STANDARDS |
|---|---|
| Creativity and Innovation: Gumball's Adventure (S3B) | **1A-AP-10:** Develop programs with sequences and simple loops, to express ideas or address a problem.<br>**1A-AP-11:** Decompose (break down) the steps needed to solve a problem into a precise sequence of instructions.<br>**1A-AP-13:** Give attribution when using the ideas and creations of others while developing programs.<br>**1A-AP-14:** Debug (identify and fix) errors in an algorithm or program that includes sequences and simple loops.<br>**1A-CS-02:** Use appropriate terminology in identifying and describing the function of common physical components of computing systems (hardware).<br>**1B-AP-08:** Compare and refine multiple algorithms for the same task and determine which is the most appropriate.<br>**1B-AP-09:** Create programs that use variables to store and modify data.<br>**1B-AP-10:** Create programs that include sequences, events, loops, and conditionals.<br>**1B-AP-13:** Use an iterative process to plan the development of a program by including others' perspectives and considering user preferences.<br>**1B-CS-02:** Model how computer hardware and software work together as a system to accomplish tasks.<br>**2-AP-11:** Create clearly named variables that represent different data types and perform operations on their values.<br>**2-AP-12:** Design and iteratively develop programs that combine control structures, including nested loops and compound conditionals. |

| | 2-AP-13: Decompose problems and subproblems into parts to facilitate the design, implementation, and review of programs. |
|---|---|
| | 2-CS-02: Design projects that combine hardware and software components to collect and exchange data. |

| COMPETENCIES | LEARNING TARGETS |
|---|---|
| I can code a program to express an idea or solve a problem. | <ul><li>I can use appropriate code to solve problems.</li><li>I can create and edit variables.</li><li>I can edit existing code to solve a new problem.</li></ul> |
| I can approach a challenge with computational thinking. | <ul><li>I can think in sequential steps.</li><li>I can break problems down into smaller steps.</li><li>I can debug a program using a variety of methods.</li><li>I can use computational thinking to solve problems.</li><li>I can describe the purpose of a section of code.</li></ul> |
| I can demonstrate an understanding of many digital devices. | <ul><li>I can understand that computers process information quickly.</li></ul> |
| I can use best practices while programming. | <ul><li>I can test code frequently to assure that it is working correctly.</li><li>I can recognize that identifying and defining problems and proposing a solution can be challenging.</li><li>I can use good programming practices to make code more readable.</li></ul> |

| SUBJECT: 5ᵗʰ Grade Computer | GRADE: 5 |
|---|---|
| Unit Title: Microsoft Office for Personal/Academic Use | Time Frame: 5 days |
| UNIT OVERVIEW | |
| Within this unit students will learn how to use Microsoft Office products for personal and academic use. By the end of this unit students will have completed projects in Microsoft Word. | |
| LRG SKILLS AND DISPOSITIONS | PA STANDARDS |
| Communication and Empathy: Some Good Advice Poem (S2B) | 1.4.5.U: With some guidance and support, use technology, including the Internet, to produce and publish writing as well as to interact and collaborate with others; demonstrate sufficient command of keyboarding skills to type a minimum of two pages in a single sitting. |

| COMPETENCIES | LEARNING TARGETS |
|---|---|
| | **15.4.5.A:** Identify emerging technologies used for educational and personal success. <br> **15.4.5.B**: Identify and demonstrate understanding of ethical, safe, and social online behavior and potential consequences of unethical, unsafe, and inappropriate behavior. |

| COMPETENCIES | LEARNING TARGETS |
|---|---|
| I can demonstrate a knowledge of keyboarding skills | ● I can use correct keyboarding posture and technique to touch-type |
| I can correctly manage files. | ● I can create a folder. <br> ● I can open files, name files, and save files. <br> ● I can submit files in Schoology. |
| I can ethically use technology. | ● I can exhibit legal and ethical behavior when using information and technology. <br> ● I can establish responsible habits for personal computer use. |
| I can demonstrate a knowledge of word processing software. | ● I can produce a variety of documents and reports. <br> ● I can focus on content, style, and format while creating documents. |

| SUBJECT: 5th Grade Computer | GRADE: 5 |
|---|---|
| **Unit Title:** MicroBit Programming | **Time Frame:** 5 Days |
| **UNIT OVERVIEW** | |
| Within this unit, students will learn how to use MicroBit controllers to access inputs and outputs. | |

| LRG SKILLS AND DISPOSITIONS | PA STANDARDS |
|---|---|
| Critical Thinking and Problem Solving; Pedometer (S4B) | **1A-AP-10:** Develop programs with sequences and simple loops, to express ideas or address a problem. <br> **1A-AP-11:** Decompose (break down) the steps needed to solve a problem into a precise sequence of instructions. <br> **1A-AP-13:** Give attribution when using the ideas and creations of others while developing programs. <br> **1A-AP-14:** Debug (identify and fix) errors in an algorithm or program that includes sequences and simple loops. <br> **1B-AP-08:** Compare and refine multiple algorithms for the same task and determine which is the most appropriate. |

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| | **1B-AP-09:** Create programs that use variables to store and modify data. |
| | **1B-AP-10:** Create programs that include sequences, events, loops, and conditionals. |
| | **1B-AP-13:** Use an iterative process to plan the development of a program by including others' perspectives and considering user preferences. |
| | **2-AP-11:** Create clearly named variables that represent different data types and perform operations on their values. |
| | **2-AP-12:** Design and iteratively develop programs that combine control structures, including nested loops and compound conditionals. |
| | **2-AP-13:** Decompose problems and subproblems into parts to facilitate the design, implementation, and review of programs. |

| COMPETENCIES | LEARNING TARGETS |
|---|---|
| I can code a program to express an idea or solve a problem. | ● I can use appropriate code to solve problems. K1CSA2H4 <br> ● I can edit existing code to solve a new problem.K1CSA2H3 <br> ● I can identify and use inputs and outputs as tools.K1CSA3F1 |
| I can approach a challenge with computational thinking. | ● I can think in sequential steps. (K1CSA2F2) <br> ● I can debug a program using a variety of methods. K1CSA1E4 <br> ● I can describe the purpose of a section of code. K1CSA2E4 |
| I can use best practices while programming. | ● I can test code frequently to assure that it is working correctly.K1CSA1E4 <br> ● I can use inputs, outputs and events to create an interactive program.K1CSA1F2 |

| SUBJECT: 5ᵗʰ Grade Computer | GRADE: 5 |
|---|---|
| **Unit Title:** Hummingbird Duo Programming | **Time Frame:** 5 Days |
| **UNIT OVERVIEW** | |
| Within this unit, students will learn how to use a Hummingbird board to turn on and off lights and motors. | |

| LRG SKILLS AND DISPOSITIONS | PA STANDARDS |
|---|---|
| Creativity and Innovation; Christmas Lights Display project (S3B) | **1A-AP-10:** Develop programs with sequences and simple loops, to express ideas or address a problem. <br> **1A-AP-11:** Decompose (break down) the steps needed to solve a problem into a precise sequence of instructions. |

| | 1A-AP-13: Give attribution when using the ideas and creations of others while developing programs. |
|---|---|
| | 1A-AP-14: Debug (identify and fix) errors in an algorithm or program that includes sequences and simple loops. |
| | 1B-AP-08: Compare and refine multiple algorithms for the same task and determine which is the most appropriate. |
| | 1B-AP-09: Create programs that use variables to store and modify data. |
| | 1B-AP-10: Create programs that include sequences, events, loops, and conditionals. |
| | 1B-AP-13: Use an iterative process to plan the development of a program by including others' perspectives and considering user preferences. |
| | 2-AP-11: Create clearly named variables that represent different data types and perform operations on their values. |
| | 2-AP-12: Design and iteratively develop programs that combine control structures, including nested loops and compound conditionals. |
| | 2-AP-13: Decompose problems and subproblems into parts to facilitate the design, implementation, and review of programs. |

| COMPETENCIES | LEARNING TARGETS |
|---|---|
| I can code a program to express an idea or solve a problem. | <ul><li>I can use appropriate code to solve problems. K1CSA2H4</li><li>I can edit existing code to solve a new problem.K1CSA2H3</li><li>I can identify and use inputs and outputs as tools.K1CSA3F1</li></ul> |
| I can approach a challenge with computational thinking. | <ul><li>I can think in sequential steps. (K1CSA2F2)</li><li>I can debug a program using a variety of methods. K1CSA1E4</li><li>I can identify patterns when working through challenges.K1CSA2F1</li></ul> |
| I can use best practices while programming. | <ul><li>I can test code frequently to assure that it is working correctly.K1CSA1E4</li><li>I can use inputs, outputs and events to create an interactive program. K1CSA1F2</li></ul> |

| SUBJECT: 5th Grade Computer | GRADE: 5 |
|---|---|
| Unit Title: Drone Programming | Time Frame: 5 Days |
| UNIT OVERVIEW | |
| Within this unit, students will learn how to use coding blocks to navigate a drone through an obstacle course. | |

| LRG SKILLS AND DISPOSITIONS | PA STANDARDS |
|---|---|
| Collaboration and Teamwork; Drone Obstacle Course (S1B) | **1A-AP-10:** Develop programs with sequences and simple loops, to express ideas or address a problem.<br>**1A-AP-11:** Decompose (break down) the steps needed to solve a problem into a precise sequence of instructions.<br>**1A-AP-13:** Give attribution when using the ideas and creations of others while developing programs.<br>**1A-AP-14:** Debug (identify and fix) errors in an algorithm or program that includes sequences and simple loops.<br>**1B-AP-08:** Compare and refine multiple algorithms for the same task and determine which is the most appropriate.<br>**1B-AP-09:** Create programs that use variables to store and modify data.<br>**1B-AP-10:** Create programs that include sequences, events, loops, and conditionals.<br>**1B-AP-13:** Use an iterative process to plan the development of a program by including others' perspectives and considering user preferences.<br>**2-AP-11:** Create clearly named variables that represent different data types and perform operations on their values.<br>**2-AP-12:** Design and iteratively develop programs that combine control structures, including nested loops and compound conditionals.<br>**2-AP-13:** Decompose problems and subproblems into parts to facilitate the design, implementation, and review of programs. |
| **COMPETENCIES** | **LEARNING TARGETS** |
| I can code a program to express an idea or solve a problem. | ● I can use appropriate code to solve problems. K1CSA2H4<br>● I can edit existing code to solve a new problem.K1CSA2H3<br>● I can identify and use inputs and outputs as tools.K1CSA3F1 |
| I can approach a challenge with computational thinking. | ● I can think in sequential steps. (K1CSA2F2)<br>● I can identify patterns when working through challenges.K1CSA2F1 |
| I can use best practices while programming. | ● I can test code frequently to assure that it is working correctly.K1CSA1E4<br>● I can use inputs, outputs and events to create an interactive program.K1CSA1F2 |